

March 17, 2015 Water Supply Forecast Discussion

The [Colorado Basin River Forecast Center \(CBRFC\)](#) geographic forecast area includes the Upper Colorado River Basin, Lower Colorado River Basin, and Eastern Great Basin.

Seasonal Water Supply Forecasts:

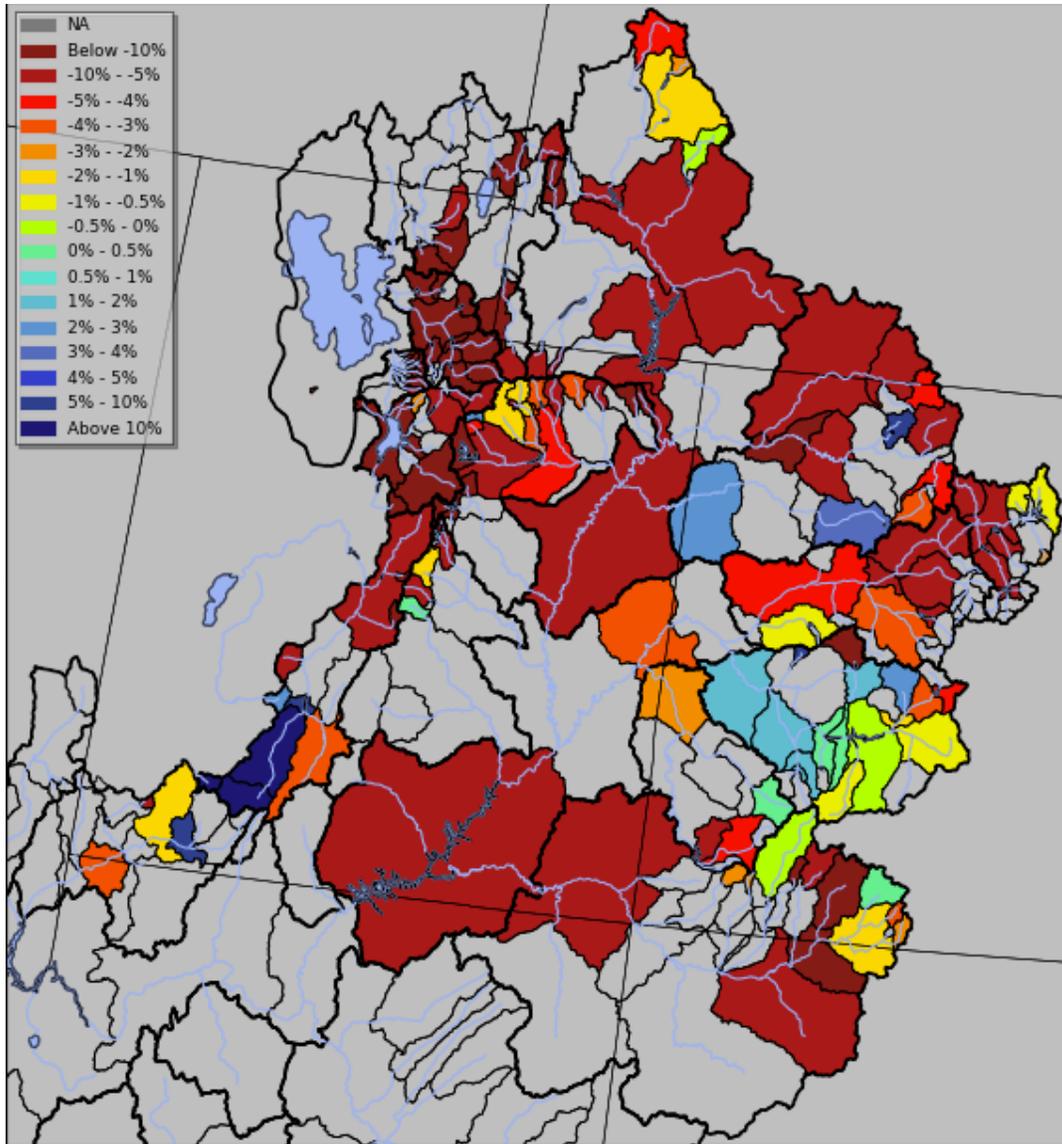
Quick Summary:

CBRFC raw model guidance has trended water supply forecasts downward over the majority of the CBRFC forecast area since March 1st. A few areas from the San Juan River Basin into the Gunnison and Yampa/White River Basins showed some increases following a storm system that moved through during the first few days of March. However since then the model trend has been generally decreasing as dry weather and record warmth returned. The warm temperatures have also caused snow melt with March runoff exceeding expectations in many areas.

Areas with expected April-July runoff volumes closest to average continue to be in the Green River above Fontenelle, Colorado River headwaters, and southeast Gunnison River Basin. Throughout the remaining areas in the Green and Colorado River Basins below average runoff is likely. Conditions continue to worsen in the eastern Great Basin with model guidance decreasing April-July volumes 10 percent or more of average from early March.

Mid March forecasts for some of the major upper Colorado River Basin reservoirs included Fontenelle inflow decreasing from 98 to 88 percent of average and Flaming Gorge inflow from 84 to 74 percent of average. Smaller changes occurred in the Gunnison Basin with Blue Mesa dropping from 89 to 87 percent of average. McPhee inflow dropped from 78 to 71 percent of average and in the San Juan Basin the forecast for inflow to Navajo Reservoir dropped from 56 to 54 percent of average. The Lake Powell inflow forecast decreased from 71 to 68 percent of average and is now at 4.85 million acre-feet.

In the Lower Colorado River Basin, the Verde and Little Colorado River Basin benefited some from the first of the month storm system. However dry conditions have returned and we are entering a climatologically drier period of the season. Mid March - May forecast streamflow volumes are for 30% of median in the Salt and Tonto River Basins and 65% of median in the Verde River Basin.



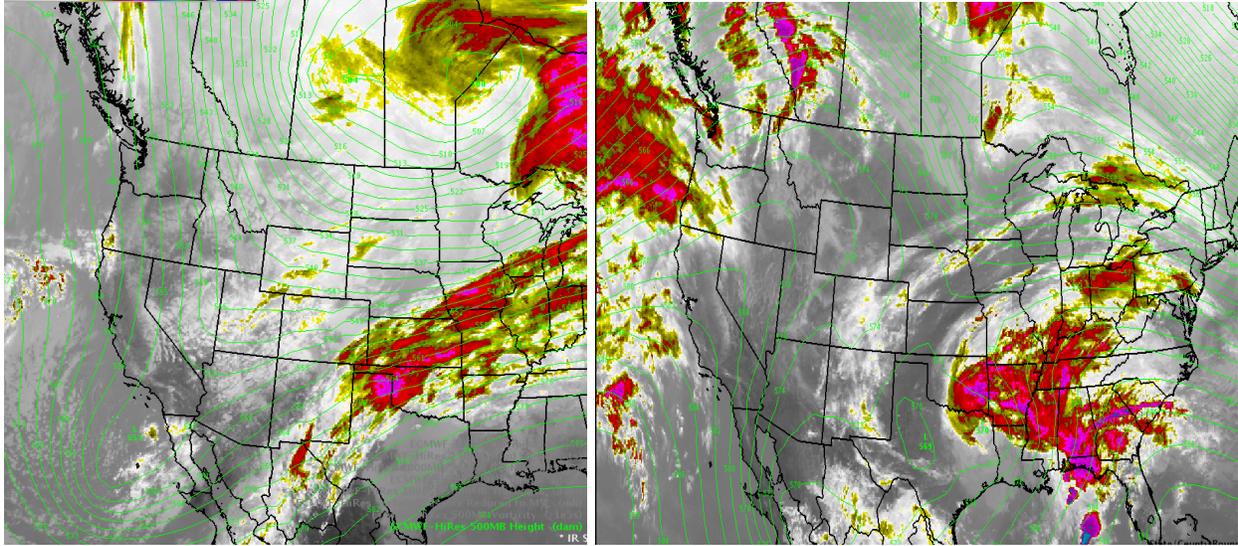
Trend in the April-July runoff volume forecasts since March 1st.
(Change in April-July percent of average)

[Click here for the latest water supply model guidance](#)

Water Supply Discussion

Weather Synopsis:

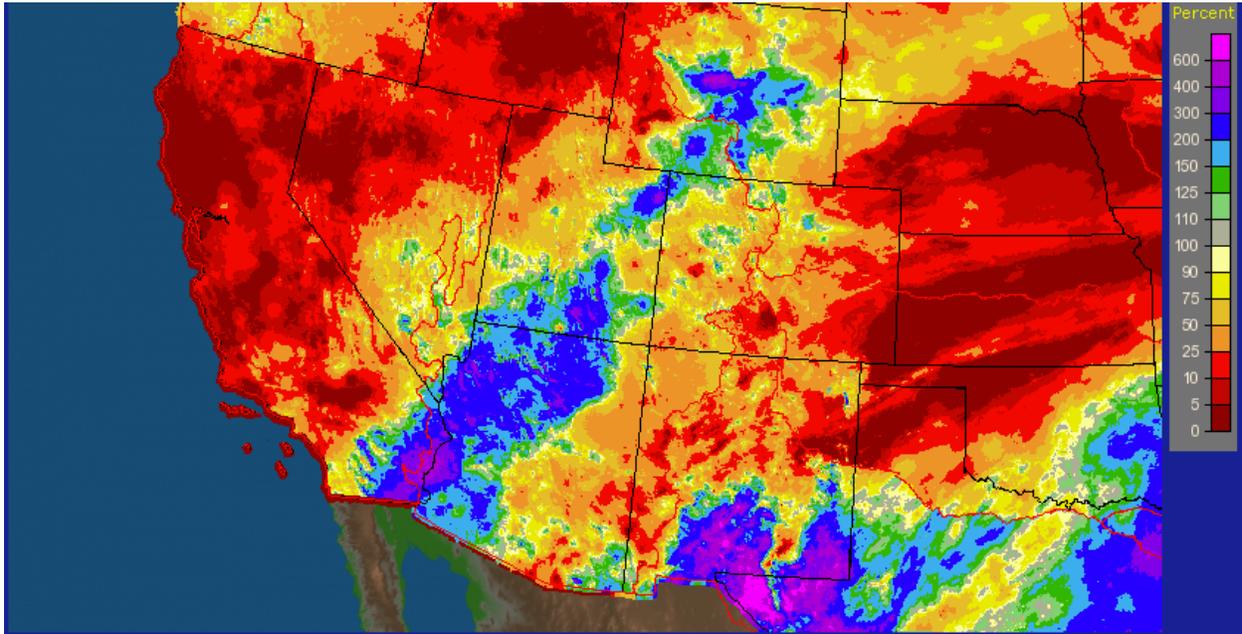
March began with a storm system moving through the southern half of the CBRFC forecast area. Another weakening storm system affected the northern part of the area during the first week of the month. A ridge of high pressure brought drier and record warmth conditions by mid March and an increase in the snow melt.



LEFT: Satellite image for March 3rd 2015 with a low pressure system near the southern California coast.
 RIGHT: High pressure building into the CBRFC forecast area from the west as of March 13 2015.

Precipitation and Temperatures:

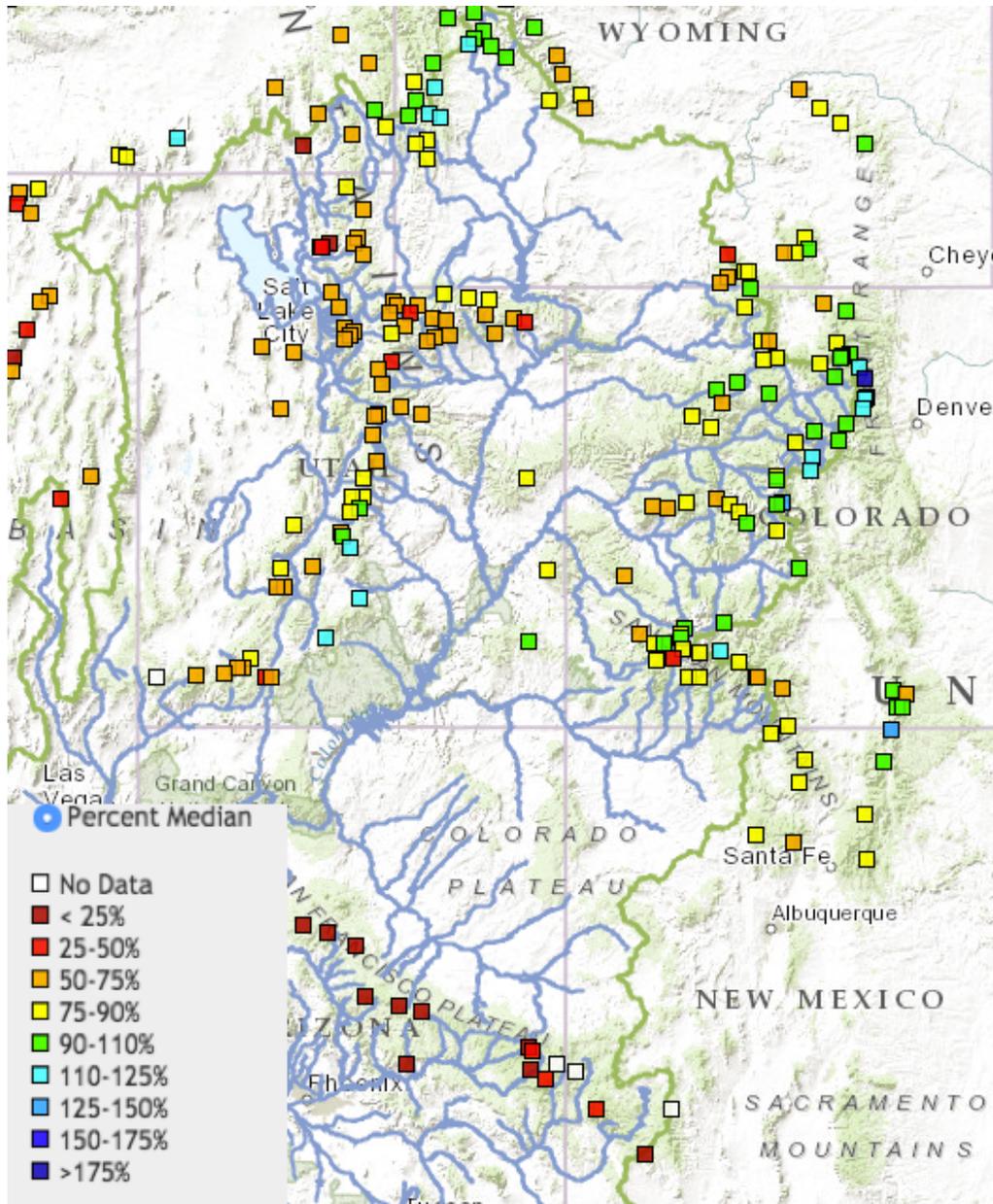
Precipitation for the first half of March saw both above and below average conditions in the CBRFC forecast areas. A storm system the first few days of the month created a path of above average precipitation spreading from western Arizona northeast into northeastern Utah and southwest Wyoming. There were pockets of near average precipitation also in western Colorado, however these were not extensive and not all that beneficial to the water supply situation. Throughout the rest of the forecast area below to much below average precipitation has occurred so far this month.



March 1-15 percent of average precipitation for the Colorado River Basin.

Snowpack:

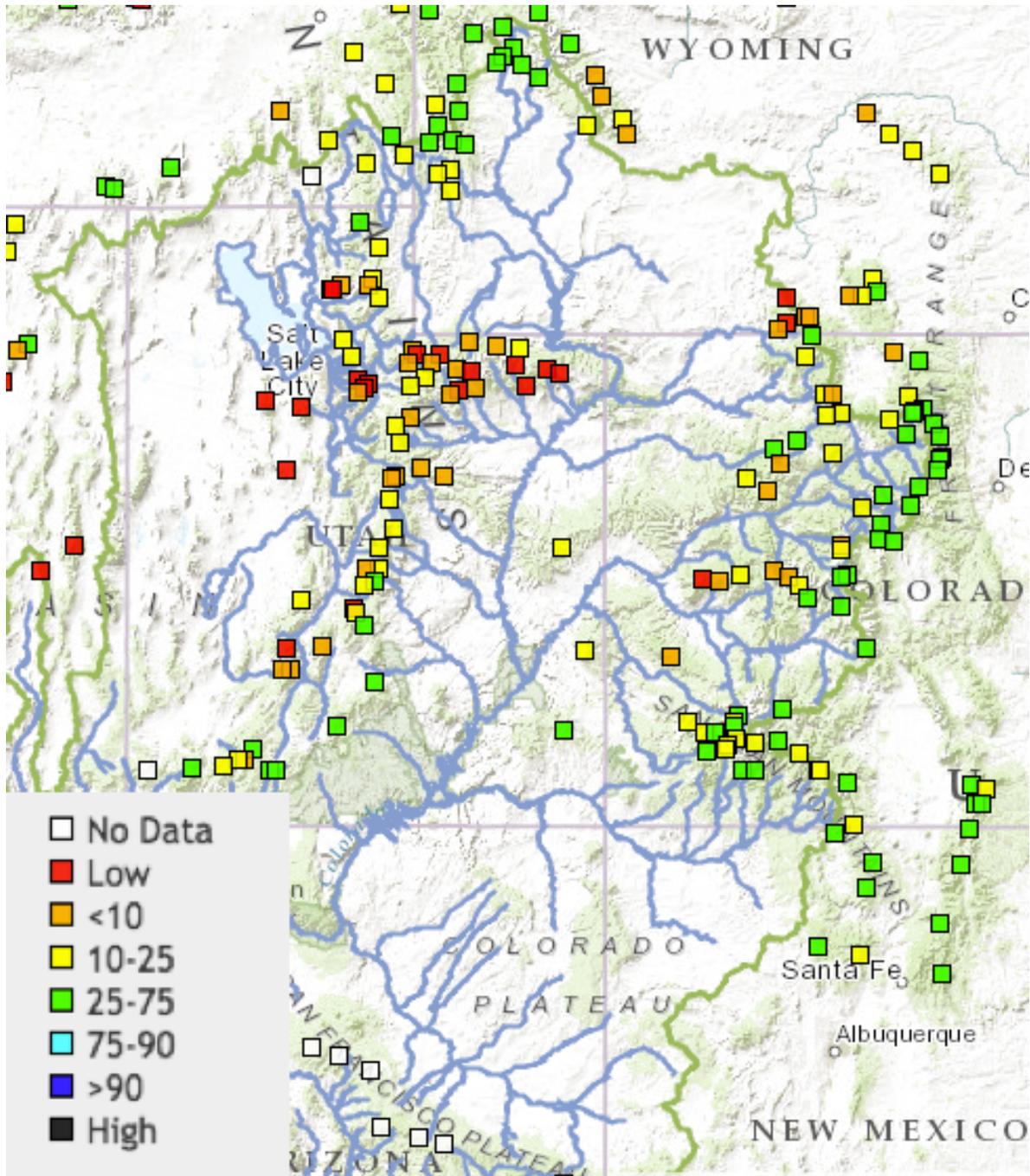
The distribution of the snowpack across the CBRFC forecast area has changed little over the past couple of months. As of mid March the areas with near or slightly above median snow conditions are limited to higher elevations in the Green River Basin above Fontenelle Reservoir, the Colorado River headwaters, southeast Gunnison River Basin and smaller tributaries of the Colorado River in southeast Utah. The Duchesne River Basin and Great Basin contain some of the poorest snow conditions with much below median conditions wide spread. Snow melt has also started to occur at most locations, even at higher elevations as of mid March.



SNOTEL Sites - Percent Median Snow condition as of March 15, 2015

For the latest snow conditions click [here](#)

The snow percentile map displayed below indicates where the current snow measurement ranks in the historical record for each site. Numerous sites indicated in red are at their lowest in over 30 years of record as of March 17, 2015. Those sites indicated with orange in the Great Basin and Duchesne River Basin rank as the 2nd, 3rd, or 4th driest in their period of record (typically between 30-37 years).



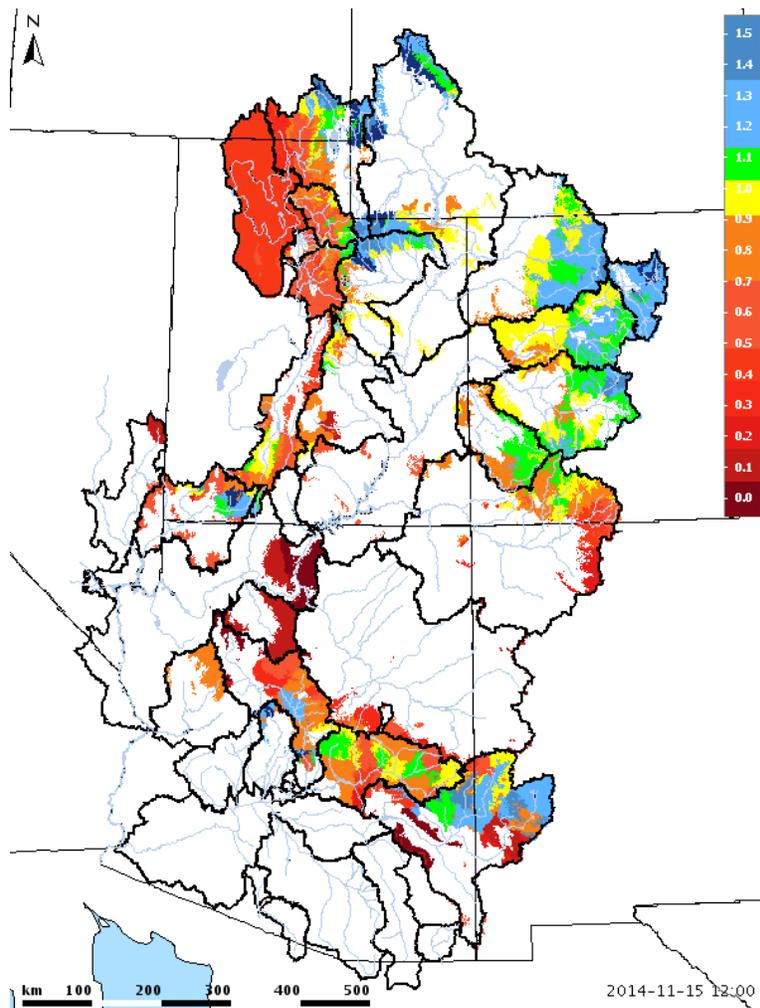
Snow Percentile Map: Historical ranking as of March 17, 2015

Soil Moisture:

Soil moisture conditions in the higher elevation headwater areas are important entering the winter, prior to snowfall, as it influences the efficiency of the snowmelt runoff the following spring. Modeled soil moisture conditions as of November 15th were above average over much of the Green River Basin above Fontenelle, headwaters of the Yampa and White River Basins, and the Colorado River headwaters above Kremmling. Above average soil moisture also existed over much of the Uinta Mountain range that drains into the Bear River, Duchesne River, and Green River above Flaming Gorge.

Soil moisture conditions were below average over the lower Bear River Basin, Weber River Basin, Provo River Basin, and Six Creeks Basins. The Sevier, San Juan, and most of the Virgin River Basins had below average soil moisture conditions entering the winter. In the Lower Colorado River Basins of Arizona conditions vary with most areas below average. However in this area, the January-May runoff volumes are primarily influenced by the frequency and magnitude of winter rain events.

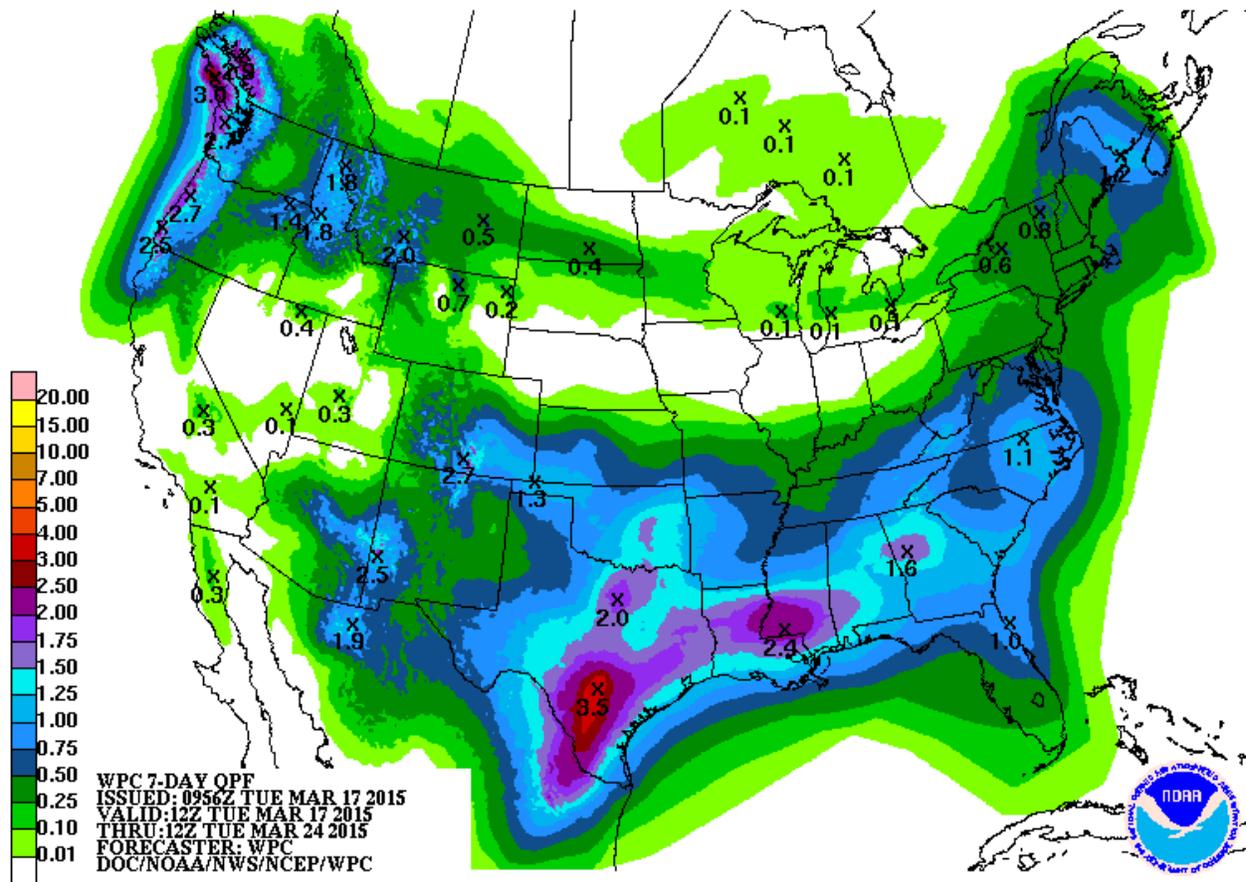
In the map below, areas in blue are above the historical model soil moisture average while those in the red and orange are below average. Only the higher elevation areas are displayed. The areas in white are not included.



Modeled soil moisture entering the winter season (as of November 15 2014)

Weather Outlook:

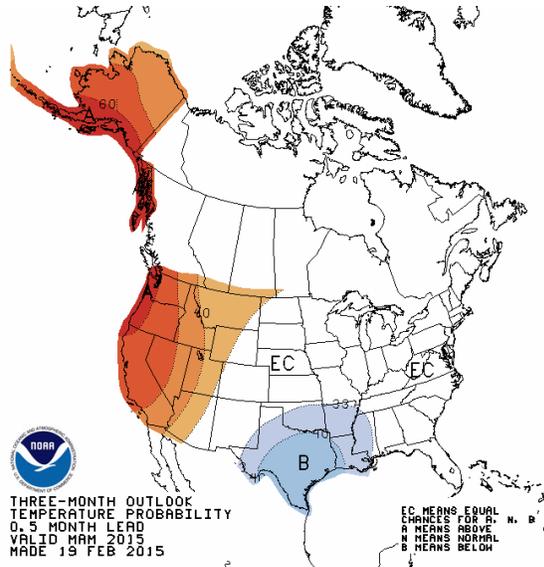
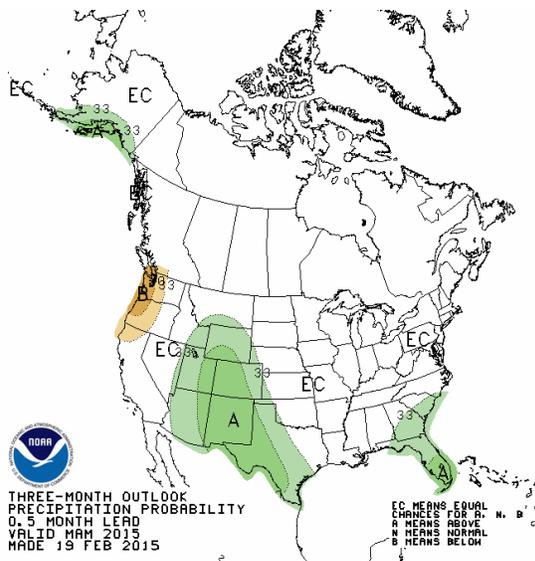
The weather pattern over the next 7-10 days is expected to be progressive with quick moving storm systems intermingled with periods of dry and warm conditions. The storms systems are not particularly strong and while some precipitation is probable it is not expected to be significant.



Precipitation outlook for March 17 - March 24 from the Weather Prediction Center.

Climate Outlook:

A weak El Niño Southern Oscillation (ENSO) condition currently exists. Climate models indicate a 50%-60% chance that weak El Niño conditions will now persist throughout 2015. However due to the expected weak strength of this event widespread impacts to precipitation and temperatures are not anticipated. Impacts over the CBRFC forecast area not expected to affect water supply forecasts at this point in the season. The Climate Prediction Center indicates enhanced chances of above normal precipitation during the March-May 2015 period over much of the Colorado River and eastern Great Basin. There are enhanced chances of above normal temperatures over the eastern Great Basin and Green River Basin of Wyoming during the same period with equal chances for above or below normal temperatures elsewhere.



Conclusion:

Record warmth at times during the winter combined with below average precipitation has resulted in very low snowpack conditions over much of the CBRFC forecast area as of mid March. Higher elevations in the Green River Basin above Fontenelle, Colorado River headwaters, southeast Gunnison River Basin, and Colorado River tributaries in southeast Utah are the only exceptions. These are also the areas where April-July runoff volumes are closest to average while elsewhere much below average runoff is expected.

In the Great Basin and Duchesne River Basin several SNOTEL sites are indicating the lowest snow on record for this time of year and this is reflected in the water supply forecasts. Since early March raw model guidance indicated decreases in April-July runoff over most areas.

Snow melt has started in many locations, including higher elevations. This has resulted in higher than anticipated runoff during the month of March.

Soil moisture conditions are most favorable in the Green River Basin above Fontenelle and Colorado River headwaters and may provide some benefit to this years runoff. Where snow conditions are poor above average soil moisture will have less impact. In the Great Basin where both soil moisture and snow conditions are poor some of the lowest runoff volumes are expected.

In the Lower Colorado River Basin below to much below median May-May volumes are anticipated. The Verde River Basin received some relief due to a storm system in early March, however dry conditions have returned and we are entering a climatologically drier part of the season in the Lower Colorado River Basin.